

# **Interim Action Workplan and Engineering Design Report**

## **Mobil and ADC/Miller Properties Everett, Washington**

Prepared for

Mobil Business Resources Corporation  
Oakley, California

and

American Distributing Company  
Everett, Washington

and

Mr. A.P. Miller  
Everett, Washington

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Engineering Design Report  
Mobil and ADC/Miller Properties  
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## ACRONYMS AND ABBREVIATIONS

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ADC	American Distributing Company
Ecology	Washington State Department of Ecology
EDR	engineering design report
IAW	Interim Action Workplan
LPH	liquid petroleum hydrocarbon
Mobil	Mobil Business Resources Corporation
MTCA	Model Toxics Control Act
OMP	Operations and Maintenance Plan
OSHA	Occupational Safety and Health Administration
PCMP	Performance and Compliance Monitoring Plan
QA/QC	quality assurance and quality control
RAO	remedial action objectives
RI/FFS	remedial investigation and focused feasibility study
Standard	Standard Oil Company
the Property	the Mobil and ADC/Miller properties
TPH	total petroleum hydrocarbon

# 1. INTRODUCTION

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On behalf of Mobil Business Resources Corporation (Mobil), American Distributing Company (ADC), and Pat Miller, Exponent (formerly PTI Environmental Services) has prepared this Interim Action Workplan (IAW) and Engineering Design Report (EDR) for the Mobil and ADC/Miller properties (the Property) located in Everett, Washington. The Property, as defined in this report, includes the Mobil parcel located at 2717 Federal Avenue and the ADC/Miller parcel located at 2701 Federal Avenue. The IAW/EDR has been prepared to comply with the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) in accordance with WAC requirements (WAC 173-340-360, 173-340-400/410, and 173-340-430).

Mobil and ADC/Miller wish to move forward with the interim actions to allow for the redevelopment of the Property into productive use and to comply with MTCA regulations. Since cessation of operations in 1987 and 1990 by Mobil and ADC/Miller, respectively, there has been no economic activity at the Property. This lack of beneficial use is due to the uncertainty associated with outstanding environmental issues. Mobil and ADC/Miller have both been approached by organizations wishing to put the Property to beneficial use, but have until now declined any offers to purchase or operate the Property.

This IAW/EDR is supported by the findings of the remedial investigation and focused feasibility study (RI/FFS), which was submitted to Ecology concurrent with this document (Exponent 1998). Additional information on the environmental conditions at the Property, remedial technology screening, and evaluation of the remedial alternatives is provided in the RI/FFS.

## 1.1 PURPOSE AND ORGANIZATION OF THE IAW/EDR

The IAW/EDR is designed to develop the proposed remedial action alternative that was identified for the Property in the RI/FFS and provide a workplan for the proposed interim actions and details of the engineering concepts and design criteria for the interim actions. Interim action design, including interceptor trench design and paved surface layout, may require further development of construction plans and specifications. If needed, these plans and specifications can be submitted to Ecology prior to construction. This IAW/EDR addresses interim remedial actions for soil and liquid petroleum hydrocarbon (LPH) at the Property. The environmental conditions of off-Property groundwater are addressed under a separate Agreed Order (No. DE95TC-N402).

The remainder of this introduction provides an overview of the regulatory framework and redevelopment plans. Subsequent sections in this report are as follows:

- Section 2 provides a physical description of the Property, summary of the ownership and history, and summary of environmental conditions
- Section 3 presents a summary of the remedial action objectives developed in the RI/FFS and an overview of proposed interim actions
- Section 4 provides a description of the proposed interim actions, including demolition of existing structures, installation of an interceptor trench and site cover, institutional controls, and general requirements.

In addition, this IAW/EDR also contains an Operations and Maintenance Plan (OMP) in Appendix A. The OMP provides procedures for operation of the interceptor trench and maintenance of the site cover. The OMP also contains the Performance and Compliance Monitoring Plan (PCMP), which provides information on performance monitoring, data analyses, and monitoring and reporting schedules.

## **1.2 REDEVELOPMENT PLANS**

The current owners wish to bring the Property back into productive use as soon as the RI/FFS and IAW/EDR process has been completed. The redevelopment process will be merged into the implementation of the interim actions to the extent possible. Currently, the redevelopment options being considered by Mobil and ADC/Miller include the conversion of the facility into a parking lot or vehicle-staging area. The redevelopment will require the creation of a driving surface cover, which will be incorporated into the remediation of the Property as a low-permeability cover, and will enhance the implementation of the interim actions.

## **1.3 REGULATORY FRAMEWORK**

This document has been prepared to meet the requirements of the cleanup regulations promulgated under MTCA and associated guidance (e.g., Ecology's Interim TPH Policy) and at the same time incorporate Mobil and ADC/Miller plans for the redevelopment of the Property. The streamlined RI/FFS/IAW/EDR approach, approved by Ecology, is in accordance with the Agreed Order (number not assigned) between Mobil, ADC, Miller, and Ecology.

The proposed interim actions are consistent with regulations as specified in WAC 173-340-430 as follows:

- The Proposed interim actions are technically necessary to reduce threats to human health and the environment by eliminating or substantially reducing one or more pathways for exposure (WAC 173-340-430 (1)(a))

- The proposed interim actions provide a partial cleanup of the Property (WAC 173-340-430 (2)(ii))
- The proposed interim actions do not foreclose reasonable alternatives for the cleanup action and do not preclude the destruction or removal of hazardous substances (WAC 173-340-430 (2)(ii)).

In addition to the actions described above, a separate Agreed Order (No. DE95TC-N402) addresses the investigation of environmental conditions outside the boundaries of the Property. Final remedial actions for the Property will be selected following completion of those investigations.



## 2. PROPERTY BACKGROUND

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The following sections provide a brief summary of the Property and environmental conditions. Additional detail is provided in the RI/FFS (Exponent 1998).

### 2.1 PROPERTY LOCATION

The Property is located in Section 19, Township 29 North, Range 5 East in Everett, Washington in Snohomish County (Figure 2-1). The Property consists of two parcels of land that are independently owned and operated: the Mobil parcel, located on the southern third of the Property, and the ADC/Miller parcel, located on the northern two-thirds of the Property (Figure 2-2). The street addresses for the Mobil and ADC/Miller properties are 2717 Federal Avenue and 2701 Federal Avenue, respectively. The Property is bordered by Kimberly Clark on the north and east, California Street to the south, and Federal Avenue on the west (Figure 2-2).

### 2.2 PROPERTY DESCRIPTION, OWNERSHIP, AND HISTORY

The two parcels that comprise the Property are on a flat-lying area approximately 300 ft east of the waterfront of Port Gardiner Bay (Figures 2-1, 2-2). The combined parcels are approximately 125 ft wide by 370 ft long, covering an area of approximately 1 acre (PTI 1997). The Property is zoned industrial and will retain that zoning in the foreseeable future.

Based on historical data, the area of the Property was reclaimed from Port Gardiner Bay by filling in the early 1900s. Additional filling of the area west of Federal Avenue was completed in the 1970s (AGRA 1996a).

Mobil and its predecessor (General Petroleum) owned and operated a bulk petroleum plant (i.e., petroleum storage and distributing facility) at the Property from 1922 until 1974. Petroleum products stored at the Property included fuel oils, stove oil, Bunker C, diesel, gasoline, and PS300 (AGRA 1996a). Based on historical information, petroleum storage and distributing facilities have been present on the Property since 1915. Standard Oil Company (Standard) operated facilities on the Property as early as 1915 (Ogden Murphy Wallace 1997). Mitsui & Company Limited owned two 55,000-barrel fuel oil tanks that were present on the Property prior to 1922 (Ogden Murphy Wallace 1998). In 1974, Mobil sold a portion of the Property (the ADC property) to Mr. A.P. Miller for use by ADC (Ecology 1996). Mobil continued bulk petroleum operations on the southern third of the Property until 1987, and removed all improvements shortly thereafter. Petroleum distributing operations continued at the ADC property until approximately 1990; some of the improvements were removed and all tanks were removed following

cessation of operations (Ecology 1996). All structures have been removed from the Mobil property; however, several buildings and a concrete firewall surrounding the former tank farm remain on the ADC property (Figure 2-2).

## 2.3 SUMMARY OF ENVIRONMENTAL CONDITIONS

Environmental investigations began at the Property in 1985. Between 1988 and 1996, over 150 individual soil samples and 160 individual groundwater samples were collected and analyzed at the Property and surrounding areas. Interim remedial actions began at the Property in 1988 with the installation of an LPH recovery gallery. Subsequent interim remedial actions and testing included groundwater extraction and treatment, test pit and recovery trench installation, soil vapor extraction, manual LPH recovery, LPH vacuum recovery, and excavation dewatering. LPH recovery activities continue to the present with weekly monitoring of nine monitoring wells. Passive removal of LPH has recently been occurring at four of the nine wells.

Results of previous investigations were summarized and evaluated in the RI/FFS prepared by Exponent (formerly PTI environmental Services) on behalf of Mobil, ADC, and Mr. A.P. Miller. Soil characterization data presented in the RI/FFS indicate that petroleum hydrocarbons are distributed heterogeneously across the Property, with total petroleum hydrocarbon (TPH) concentrations ranging from undetected to 100,000 mg/kg. The highest concentrations are in areas saturated with LPH. Groundwater characterization beneath the Property indicated TPH concentrations in groundwater ranging from undetected to 43,000  $\mu\text{g/L}$ . LPH has also been detected in groundwater at various locations across the Property. LPH typing analysis indicated that the LPH had characteristics similar to several petroleum products, including No. 2 fuel, heavy fuel oil (Bunker C), and weathered crude oil.

### 3. REMEDIAL ACTION OBJECTIVES

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In the RI/FFS (Exponent 1998), remedial action objectives (RAOs) for the interim action were developed based on the site characterization data, the exposure pathway analysis, and risk characterization. Based on analysis of site-specific data, as described in the RI/FFS, the RAOs for the Property are:

- Remove recoverable LPH from the Property to the extent practicable
- Prevent the downgradient offsite migration of LPH from the Property to nearby groundwater and surface water
- Prevent direct contact with LPH
- Prevent direct contact with soils that exceed the benchmark risk-based concentration of 105,000 mg/kg
- Mitigate aesthetic effects on surface water at the Property as appropriate related to elevated LPH concentrations in soil.

Based on the characterization information, hazard evaluation, and remedial alternative evaluation presented in the RI/FFS, the installation of LPH recovery trenches and the capping of the Property with a low-permeability cover will achieve all the remedial objectives listed above. Completion of the proposed interim actions at the Property will reduce the risk to human health and the environment and facilitate the redevelopment of the Property and Everett's industrial waterfront.

These interim actions are consistent with proposed redevelopment of the Property, which includes creation of a driving surface cover for the Property. The driving surface will be incorporated into the remediation of the Property as a low-permeability cover, and will enhance the implementation of the interim actions.

## 4. PROPOSED INTERIM ACTIONS

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The following sections outline the proposed interim actions for the Property. This IAW/EDR may be supplemented with additional details as required by additional reporting or design requirements requested by Ecology or the City of Everett, and local, state, or federal building codes. Interim action design, including paved surface layout, may require further engineering design. Following approval of this IAW/EDR, a qualified Contractor will be selected to expeditiously implement the proposed interim actions.

### 4.1 DEMOLITION OF SITE STRUCTURES

The requirements presented in this section apply to the demolition of the aboveground structures located within the area designated on Figure 4-1. The aboveground structures include, but are not necessarily limited to, the structures shown on Figure 4-1. In addition to the aboveground structures, there may be some underground structures that may need to be addressed as part of the site redevelopment. The underground structures are discussed at the end of this section.

Prior to demolition activities at the Property, groundwater samples will be collected from five existing on-Property LPH monitoring wells (W-6, W-10, MW-10, MW-18, and MW-40) to assess pre-construction groundwater quality. Groundwater samples will be collected and submitted for laboratory analyses for TPH by Ecology Method WTPH; polycyclic aromatic hydrocarbons (PAH) by EPA Method 8310; gasoline, benzene, toluene, ethylbenzene, and total xylenes by Ecology Method WTPH-G/BTEX; and diesel by Ecology Method WTPH-D.

Following collection of groundwater samples discussed above and prior to demolishing the aboveground structures, the Contractor will meet with the onsite representative to discuss and verify the specific structures to be demolished; the approach for separating solid material from other demolition debris; and the concrete slabs and/or footings that will be left in place. The Contractor will evaluate the need for asbestos abatement and conduct asbestos abatement, as needed, in accordance with applicable regulations and standard demolition practices prior to demolishing the structures. The Contractor will demolish the aboveground structures to the concrete slabs and/or the concrete footings. The Contractor will separate the solid materials (e.g., concrete, cinder blocks, bricks) that will be used as onsite fill from the other demolition material. The type and extent of material separation will be as agreed upon with the onsite representative prior to demolishing the structures. The Contractor will crush the separate, solid material and use it as onsite fill in the low-lying areas in the redevelopment area. The Contractor will remove all remaining demolished material from the slabs, footings, and ground surface. Prior to conducting any offsite hauling or disposal of material, the Contractor will

identify the haul route and licensed offsite disposal facility and obtain approval from the onsite representative. The Contractor will load, haul, and dispose of the material at the designated facility. The Contractor will provide all landfill receipts to the onsite representative to substantiate proper disposal of the material.

#### **4.1.1 Demolition of Underground Structures**

One underground structure that may need to be addressed during site redevelopment includes an infiltration gallery that was installed in 1988 (Figure 4-1). The infiltration gallery included a trench that was backfilled with gravel and two modified 55-gal drums that were used as sumps. No LPH has been observed in the infiltration gallery since 1989. If the two sumps have not been previously filled, the Contractor will fill them with concrete prior to constructing the cap in that area. Any other underground structures encountered will be abandoned or removed and disposed of in accordance with standard industry practices.

#### **4.1.2 Monitoring and Extraction Well Abandonment**

Mobil and ADC/Miller propose to abandon groundwater monitoring wells within the property boundary. Five existing monitoring wells (W-6, W-10, MW-10, MW-18, and MW-40) will be maintained on the Property to monitor performance of the LPH recovery system. Two extraction wells (W-1 and W-15) will also be maintained on the Property as part of the ongoing LPH recovery system. The locations of monitoring and extraction wells to be abandoned are included in Figure 4-2. If any of the seven wells listed above are destroyed inadvertently during construction activities on the Property, a replacement well will be installed at an adjacent location.

All wells will be abandoned in accordance with Washington State minimum standards for well construction and abandonment of resource protection wells (WAC Chapter 173-160-560). In general, the wells will be abandoned by filling the casing from the bottom to the surface with grout or bentonite. Well abandonment record forms will be submitted to Ecology within 30 days of abandonment.

### **4.2 CONSTRUCTION OF INTERCEPTOR TRENCH**

The requirements in this section apply to the interceptor trench that will be constructed along the western and northern Property boundaries as shown on Figure 4-3. The trench design will make use of an existing concrete footing structure to serve as an LPH migration barrier (Figure 4-4). Where the footing does not exist, an impermeable liner will be placed over the downgradient side of the trench; the impermeable liner will be contiguous with the footing in those areas. LPH recovery pipes will be constructed in the trench and the trench will be backfilled with uniform washed gravel.

The Contractor will excavate the trench to a width of 1.5–3 ft and a depth of 4–5 ft below present grade. The soil removed during excavation will be used as onsite fill unless the onsite representative determines that it is not suitable for fill material or the TPH concentration exceeds the benchmark concentration of 105,000 mg/kg (Exponent 1998). Soil samples will be collected from the excavated soil for TPH analysis if the onsite representative observes soil that contains significantly elevated concentrations of TPH.

Excavated soil that is sampled for TPH and pending offsite treatment and disposal will be stockpiled separately until laboratory analytical results are received. Temporary measures such as constructing berms and/or covering the stockpile with plastic will be implemented, as appropriate, to prevent runoff. Excavated soil may also be hauled directly to an Ecology-approved facility that treats TPH-affected soil (following profiling of the soil and obtaining permission from the approved facility).

The Contractor will excavate the trench on the east side of the existing concrete footing. The trench will be excavated as close to the footing as practicable without damaging the footing. Where the footing does not exist or has deteriorated to the extent that it will not serve as an adequate barrier, an impermeable liner will be placed over the downgradient side of the trench and keyed into the surface soil. The liner will be a 16-mil-thick HDPE or an equivalent liner that is approved in advance by the onsite representative. The liner will extend to the bottom of the excavation but will not cover the bottom of the excavation. The liner sheets will be placed with a 12-in. overlap on the sides.

LPH recovery pipes will be installed in the interceptor trench on 50-ft centers (Figure 4-5). The recovery pipes will extend to the bottom of the trench and consist of 4-in.-diameter PVC machine slotted screens (0.06-in. slots) with an end cap on the bottom. The recovery pipes will be screened from the bottom of the trench to above the top of the seasonal high water table (to the approximate bottom of the  $\frac{3}{4}$ -in.-minus gravel pack as shown on Figure 4-4). The top of the screen will have a blank riser with threaded couplings extending from the screened section to the ground surface. A locking expansion plug will be placed at the top of the riser. Protective watertight manholes will enclose the upper portion of the pipes and will be flush with the pavement. The manholes will be 18-in.-diameter with a 12-in. skirt. The manhole lid will bolt to the manhole. All recovery pipes will be constructed in general accordance with industry standard practice.

The recovery pipes will be connected with 3-in. PVC conduit to allow for a potential future automated recovery system (i.e., fluid piping and air hoses), if desired. The conduit will be placed at approximately 8 in. below the ground surface and will be accessible through the manhole described above (Figure 4-4).

The trench will be backfilled with uniform washed gravel. A  $\frac{3}{4}$ -in.-minus gravel pack will be used around each manhole. A geotextile or geomembrane will be placed at the bottom of the gravel pack to retain the fines in the gravel. The gravel pack and underlying membrane will be consistent with the final design of the site cover. Operation and maintenance of the interceptor trench is discussed in Appendix A.

### 4.3 CONSTRUCTION OF SITE COVER

The requirements in this section apply to the construction of the site cover for the Property. The area shown in Figure 4-1 will be filled to grade, as needed, and covered with asphalt or an equivalent low-permeability cover. The cover will be designed to a thickness and permeability to minimize the potential for infiltration of surface water into subsurface soils, which will impede contaminant transport to, and minimize degradation of, groundwater. If asphalt is selected as the cover material, the asphalt cover will be a minimum of 3 in. thick. For comparison, the asphalt cover for the City of Tacoma refuse landfill was 3 in. of hot-mix asphalt, and was shown to have a maximum permeability of less than  $9.1 \times 10^{-10}$  cm/second (Schlect 1991). A storm water collection system will be included in the design for the cover. This system will depend on the type and layout of paved surfaces at the Property and will incorporate, to the extent possible, any existing storm water collection structures.

### 4.4 GENERAL REQUIREMENTS

The Contractor shall follow all of the requirements presented below for all construction and redevelopment activities.

#### 4.4.1 Laws, Regulations, and Standards

The work conducted shall conform to all applicable state, federal, and local laws, regulations, and other standards. The Contractor shall maintain current licenses and certifications necessary, by all applicable laws and regulations, to complete the work as specified in this plan. The following text identifies federal, state and local requirements that are potentially applicable or relevant and appropriate (ARARs) for remedial actions at the Everett Bulk Plant Site.

##### 4.4.1.1 ARARs Based on Federal Laws

**Clean Air Act (CAA)** (42 U.S.C. §§ 7401 et seq)—The CAA regulates the emission of pollutants into the air. In Washington, the majority of CAA authority has been delegated to Ecology and is implemented through the Washington State Clean Air Act (see below).

**Clean Water Act (CWA)** (33 U.S.C. §§ 1251-1387)—The CWA regulates the discharge of pollutants into waters of the United States. In Washington, the majority of CWA authority has been delegated to Ecology and is implemented through the Washington Pollution Control Act (see below).

**Resource Conservation and Recovery Act (RCRA)** (42 U.S.C. §§ 6901-6691)—RCRA provides requirements that address the generation, transport, storage, treatment, and disposal of hazardous waste. In Washington, the majority of RCRA authority has been delegated to Ecology and is implemented through the Hazardous Waste Management Act (see below).

**Occupational Safety and Health Administration (OSHA) (29 CFR 1910) Standards for Hazardous Waste Operations and Emergency Response**—OSHA provides requirements that address the training necessary for site workers in hazardous waste operations.

#### **4.4.1.2 ARARs Based on State Laws**

**Model Toxics Control Act (MTCA)** (Chapter 70.105D RCW); **MTCA Cleanup Regulations** (Chapter 173-340 WAC)—MTCA governs the investigation and cleanup of the Site. The MTCA Cleanup Regulations specify that cleanup actions use permanent solutions to the maximum extent practicable. Recent amendments to MTCA exempt remedial actions conducted pursuant to an Agreed Order or Consent Decree from the procedural requirements of the Washington Clean Air Act (RCW chapter 70.94), Solid Waste Management Act (RCW chapter 70.95), Hazardous Waste Management Act (RCW chapter 70.105), Water Pollution Control Act (RCW chapter 90.48), Shoreline Management Act (RCW chapter 90.58), and Construction Projects in State Waters Act (RCW chapter 75.20). In addition, the exemption applies to the procedural requirements of laws requiring or authorizing local government permits or approval for the remedial action. Therefore, while substantive compliance is necessary, permits and approvals are not required for remedial actions at the site.

**State Environmental Policy Act (SEPA)** (Chapter 43.21C RCW); **SEPA Rules** (Chapter 197-11 WAC); **SEPA Procedures** (Chapter 173-802 WAC)—The SEPA process is triggered when government action is taken on a public or private proposal. If the proposal is determined by Ecology to have a probable significant adverse environmental impact, an environmental statement will be required. If in Ecology's opinion there will be no significant adverse environmental impact, then a determination of nonsignificance will be issued. Site investigations and studies are generally exempt from the SEPA process under WAC 197-11-800.

**Hazardous Waste Management Act (HWMA)** (Chapter 70.105 RCW); **Dangerous Waste Regulations** (Chapter 173-303 WAC)—The HWMA and the Dangerous Waste Regulations contain rules relating to the generation, handling, storage, and disposal of hazardous waste. MTCA exempts remedial actions from the procedural requirements of the HWMA and the regulations adopted thereunder. The exemption does not apply, however, to the substantive provisions of the act or the regulations.



Based on previous sampling and analysis performed at the Property, soil excavated during implementation of this IAW should not be classified as a dangerous waste under Chapter 173-303 WAC. Specifically, soil analytical results indicate that the concentrations of carcinogenic polycyclic aromatic hydrocarbons, benzene, and lead are not expected to be high enough to trigger classification of the soil generated during excavation of the LPH recovery trench as a dangerous waste. A summary of the concentrations of these chemicals measured at the site is available in the RI/FFS (Exponent 1998).

**Solid Waste Management Act (SWMA)** (*Chapter 70.95 RCW*); **Minimum Functional Standards for Solid Waste Handling** (*Chapter 173-304 WAC*)—The SWMA and the Minimum Functional Standards for Solid Waste Handling contain rules relating to the management of solid waste. MTCA exempts remedial actions from the procedural requirements of the SWMA and the regulations adopted thereunder. The exemption does not apply, however, to the substantive provisions of the act or the regulations.

**Washington Clean Air Act (WCAA)** (*Chapter 70.94 RCW*); **General Regulations for Air Pollution Sources** (*Chapter 173-400 WAC*); **Controls for New Sources of Air Pollution** (*Chapter 173-460 WAC*)—The WCAA regulates the emission of pollutants into the air. MTCA exempts remedial actions from the procedural requirements of the WCAA and the regulations adopted thereunder. The exemption does not apply, however, to the substantive provisions of the act or the regulations.

**Water Pollution Control Act (WPCA)** (*Chapter 90.48 RCW*); **Surface Water Quality Standards** (*Chapter 173-201A WAC*); **State Waste Discharge Program** (*Chapter 173-216 WAC*); **NPDES Permit Program** (*Chapter 173-320 WAC*)—The WPCA regulates the discharge of pollutants into waters of the state. MTCA exempts remedial actions from the procedural requirements of the WPCA and the regulations adopted thereunder. The exemption does not apply, however, to the substantive provisions of the act or the regulations.

**Water Well Construction** (*Chapter 18.104 RCW*); **Minimum Standards for Construction and Maintenance of Wells** (*Chapter 173-360 WAC*)—These laws are applicable to remedial actions that include construction of wells used for groundwater extraction, monitoring, or injection of treated groundwater or wastes. These requirements also include standards for well abandonment.

#### 4.4.1.3 ARARs Based on Local Regulations

**Puget Sound Air Pollution Control Agency (PSAPCA)**—PSAPCA, created under the authority of the Washington Clean Air Act, regulates the emission of air contaminants from all sources in King, Pierce, Snohomish, and Kitsap county areas. MTCA

exempts remedial actions from the procedural requirements of PSAPCA. This exemption does not apply, however, to the substantive PSAPCA requirements.

**Everett Municipal Code; City of Everett Ordinances**—MTCA exempts remedial actions from the procedural requirements of the Everett Municipal Code and City of Everett Ordinances requiring or authorizing local government permits or approvals for the remedial action. The exemption does not apply, however, to the substantive requirements of the code or ordinances. Potential City of Everett ARARs include the substantive requirements for grading permits and right-of-way access permits.

#### **4.4.2 Materials and Equipment**

The Contractor shall provide all equipment and materials required to conduct all of the construction and redevelopment work identified in this plan for the Contractor. The Contractor shall be responsible for providing personal protective equipment for its employees as described below.

#### **4.4.3 Site Health and Safety Plan**

The Property contains hazardous substances; therefore, work at the Property that involves potential contact with the hazardous substances requires the use of an OSHA health-and-safety-trained crew. In addition, the Contractor must comply with other OSHA and State of Washington health and safety regulations, as applicable.

The Contractor shall prepare a complete site health and safety plan to be followed at all times by the Contractor's employees for all work elements conducted under this cleanup plan. The Contractor's site health and safety plan shall include procedures for monitoring vapors in accordance with applicable regulations. Although the Contractor will be encouraged to follow proper health and safety procedures, neither Mobil, ADC/Miller, nor their representatives shall be responsible for the Contractor's adherence to the site health and safety plan or proper health and safety precautions when performing work under this cleanup plan. A health and safety plan will be submitted to Ecology prior to commencement of the interim actions.

The Contractor shall certify the training and medical monitoring of the personnel to be used onsite in writing prior to beginning work and shall provide copies of current 8-hour update training certification for these personnel prior to commencement of work onsite. The contractor will be responsible for providing the necessary safety equipment for its employees prior to their entering the site.

#### **4.4.4 Site Control and Decontamination**

The Contractor shall establish appropriate site control measures to prevent the spread of contamination throughout the site or offsite and to control access to the site. The Contractor shall establish the exclusion zone(s) (i.e., the contaminated area), contamination reduction zone(s) (i.e., the area where decontamination takes place), and the support zone(s) (i.e., the uncontaminated area where workers should not be exposed to hazardous conditions). Personnel and equipment that have come into contact with contaminated material at the site shall be decontaminated prior to entering any support zone or leaving the site. The Contractor shall establish appropriate decontamination procedures and construct a decontamination pad, as needed. All decontamination liquids, personal protective equipment (e.g., protective clothing), and similar material generated during decontamination activities shall be properly managed and disposed of.

#### **4.4.5 Sampling and Analysis**

Sampling and analysis of soil, groundwater, or other media, as necessary during implementation of the remedial action, will be conducted in accordance with U.S. EPA SW-846 methods and procedures, and other approved EPA or Ecology methods, as needed. This will include, but is not limited to, conformance with the following protocols:

- Use of proper sample collection procedures.
- Use of proper sample containers, labels, and preservation techniques.
- Adherence to strict quality assurance and quality control (QA/QC) procedures in the field and at the laboratory to ensure representative sampling. This includes, but is not limited to, requirements for sample holding times, analytical detection limits, and collection and review of QA/QC field and laboratory samples.
- Use of proper chain-of-custody forms and procedures.

#### **4.4.6 Recordkeeping and Reporting**

The Contractor shall maintain and submit records to document the work performed. These record and submittal requirements include, but are not limited to, the following:

- Daily Activity Log — A daily activity log shall be completed to describe general site activities and personnel working onsite. These records shall be completed daily and provided to the onsite representative weekly and may be used to substantiate billings invoiced.

- **Health and Safety Log** — A daily record of the personnel onsite and the health and safety levels worked by task shall be maintained. Results of field health and safety monitoring shall be documented in the health and safety log. These records shall be maintained daily and provided to the onsite representative weekly.
- **Material Transfer Log** — A daily log of material transferred offsite shall be kept. All receipts from landfills or other transfer or disposal facilities shall be kept. These records shall be maintained daily and provided to the onsite representative weekly.

In addition to the above records, onsite representatives will maintain a daily activity log and complete records of all samples collected.

#### **4.4.7 Site Management**

The Contractor shall keep the work area orderly and clean at all times. The Contractor shall pick up and properly dispose of all trash and debris related to the work performed under this workplan. Trash shall be picked up on a daily basis. The Contractor shall provide adequate containers, as needed, for the temporary storage of all trash and waste material generated onsite. Upon completion of the work, the Contractor shall remove all job-related equipment (decontaminated as necessary), waste, and trash from the site.

The Contractor shall implement dust control and surface water runoff controls at the Property at all times as needed during construction. Dust suppressants other than water must be approved in advance by the City of Everett and Ecology.

## 5. SCHEDULE

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The Contractor selection process will begin within 30 days after Ecology approval of the IAW/EDR. Engineering, design, and construction activities will commence within 45 days of the contractor selection process initiation, weather permitting. These activities will include demolition of Property structures, abandonment of wells described herein, installation of the interceptor trench and recovery pipes, grading of the Property, and installation of the site cover. Additional plans, if needed, will be submitted to Ecology prior to construction. Brief progress reports will be prepared for Ecology on a monthly basis during construction; these reports will be submitted to Ecology during the first week of each month until completion of the interceptor trench and site cover.

LPH monitoring and recovery activities will be initiated within 2 weeks after the interceptor trench and recovery pipes are installed.

60 days after completion of the interim action, a draft groundwater monitoring plan will be submitted to Ecology. The groundwater monitoring plan will include details of the semiannual groundwater monitoring that will occur subsequent to implementation of the interim action.

## 6. REFERENCES

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## Figures

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Figure 2-1. Mobil and ADC/Miller Property location

Figure 2-2. Mobil and ADC/Miller Property, Everett, Washington

Figure 4-1. Redevelopment area for interim action

Figure 4-2. Wells to be abandoned

Figure 4-3. Proposed interceptor trench and site cover locations

Figure 4-4. Cross section of interceptor trench

Figure 4-5. Layout of recovery wells and pipes



## **Appendix A**

### **Operations and Maintenance Plan and Performance and Compliance Monitoring Plan**

## INTRODUCTION

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This Operations and Maintenance Plan (OMP) and Performance Compliance Monitoring Plan (PCMP) has been prepared on behalf of the Mobil Business Resources Corporation (Mobil) and American Distributing Company (ADC)/Pat Miller properties, collectively termed the Property, located in Everett, Washington. The OMP and PCMP support implementation of the proposed interim actions presented in the Interim Action Workplan (IAW) and Engineering Design Report (EDR). The reader is referred to the IAW/EDR for additional details of the proposed interim actions. In addition, a detailed description of the Property, environmental conditions, and the nature and extent of petroleum hydrocarbons at the Property are presented in the Remedial Investigation/Focused Feasibility Study (RI/FFS) (Exponent 1998).

The purpose of the OMP is to present technical guidance on operations and maintenance of the liquid petroleum hydrocarbon (LPH) interceptor trench and associated recovery wells and pipes, LPH thickness measurements, LPH recovery from offsite recovery wells, storage and recycling of recovered LPH, and maintenance of the site cover. The PCMP provides guidelines for monitoring off-Property LPH monitoring wells, and reporting of monitoring and performance data to Ecology. The OMP/PCMP has been developed to meet the requirements of Ecology's site cleanup and monitoring regulations per Washington Administrative Code (WAC) 173-340-400 and 173-340-410. Finally, the OMP/PCMP is designed for use by the present or future Property owners or qualified Contractors selected to perform operation, maintenance, and monitoring tasks described herein.

# OPERATIONS AND MAINTENANCE PLAN

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## INTERIM SYSTEM DESCRIPTION

The interim remediation systems at the Property will include the interceptor trench, interceptor trench recovery pipes, two on-Property recovery wells, three off-Property recovery wells, and a surface cap over the entire Property, as described in the IAW/EDR. In addition, several off-Property and on-Property LPH monitoring wells located around the perimeter of the Property will be monitored for the presence of LPH. If LPH is present in any of those wells, they will be added to the recovery network.

The interceptor trench will be installed along the northern and eastern margins of the Property, as shown in Figure A-1. The trench will be excavated to a width of 1.5–3 ft and depth of 4–5 ft below present grade. The trench will be backfilled with uniform washed gravel. A  $\frac{3}{4}$ -in.-minus gravel pack will be used around each manhole and above the washed gravel. A geotextile or geomembrane will be placed at the bottom of the gravel pack (above the washed gravel) to retain the fines in the gravel. The gravel pack and underlying membrane will be consistent with the final design of the site cover.

During backfilling of the interceptor trench, LPH recovery pipes will be installed in the trench on 50-ft centers (Figure A-1). The pipes will extend to the bottom of the trench and consist of 4-in.-diameter PVC machine slotted screens (0.06-in. slots) with an end cap on the bottom. The recovery pipes will be screened from the bottom of the trench to above the top of the seasonal high water table (to the approximate bottom of the  $\frac{3}{4}$ -in.-minus gravel pack as shown on Figure A-2). The top of the screen will have a blank riser with threaded couplings extending from the screened section to the ground surface. A locking expansion plug will be placed at the top of the riser. Protective watertight manholes will enclose the upper portion of the pipes and will be flush with the pavement. The manholes will be 18-in.-diameter with a 12-in. skirt. The manhole lid will bolt to the manhole.

The recovery pipes will be connected with 3-in. PVC conduit to allow for a potential future automated recovery system (i.e., fluid piping and air hoses), if desired. The conduit will be placed approximately 8 in. below the ground surface and will be accessible through the manhole described above (Figure A-2).

Other LPH recovery structures include two existing on-Property recovery wells (W-1 and W-15), and three existing off-Property recovery wells (MW-27, MW-29, and MW-30). Each of the five existing recovery wells is constructed of 2-in.-inside-diameter PVC with flush-to-grade surface seal, and has a total depth between 12 and 23 ft below present grade. Recovery well locations are shown on Figure A-1.

In addition to the interceptor trench and recovery pipes, a low-permeability cover (i.e., asphalt parking lot or equivalent) will be installed across the entire Property. The cover will be designed to a thickness and permeability that will minimize the potential for infiltration of surface water into subsurface soils.

## **LPH EXTRACTION**

The objective of the LPH recovery procedure is to recover and record the maximum quantity of LPH from each recovery well or pipe. Initially, bailers will be used for LPH recovery. If sufficient quantities of LPH are recovered, use of passive hydrocarbon recovery canisters may be used, as described below.

LPH recovery should be performed daily for the first week of operation, and weekly thereafter. If the measured LPH thickness in all recovery wells or pipes is less than 0.02 ft on subsequent weekly visits, then the recovery frequency will be reduced to monthly or quarterly depending on how much time is required for LPH recharge of at least 0.02 ft.

LPH monitoring and recovery will be conducted at wells W-1, W-15, MW-27, MW-29, MW-30, and all LPH recovery pipes in the interceptor trench.

## **LPH Recovery Using Bailers**

Bailers offer a simple, low-cost method of LPH recovery. The steps involved include measuring and recording LPH thickness from each recovery well or recovery pipe, removing LPH, recording the quantity of LPH recovered, and transferring recovered LPH to the storage vessel. These procedures are described in more detail below.

### **Equipment Required**

- Electric oil/water interface probe
- Bailer and cord (disposable polyethylene or top-loading stainless steel)
- 5- or 10-gal graduated pail for LPH measurement
- LPH storage vessel (e.g., 55-gal steel UN-approved drum)
- Secondary containment vessel (e.g., overpack drum for 55-gal drum)
- Alconox<sup>®</sup> or similar non-phosphate detergent
- Decontamination equipment (Alconox<sup>®</sup> or similar detergent, buckets, brush)
- Distilled or deionized water

- Personal protective equipment (i.e., disposable gloves, boots).

## Procedures

During each LPH recovery event, prior to LPH recovery, LPH thickness will be measured in each well or pipe and recorded. LPH thickness is calculated by subtracting the depth to LPH from the depth to groundwater. LPH and groundwater depths are measured using an electric oil/water interface probe (probe). The probe is equipped with a battery powered alarm that, when lowered into the well, returns one signal when the bottom of the probe has reached LPH and a different signal when the bottom of the probe has reached groundwater. The depths to LPH and groundwater are measured by noting the graduated markings on the probe's tape. The graduated markings are in feet, tenths of feet, and hundredths of feet and are measured from the top of the well casing. Because not all casings are cut precisely horizontally, when a well or pipe is originally installed, a mark or notch is placed on one side of the casing to indicate the location on the casing at which depths to LPH and groundwater are measured. This mark or notch will be plainly visible when the well casing cap is removed. After each use, the probe will be cleaned using Alconox<sup>®</sup> or similar detergent and then rinsed with distilled water.

After LPH measurement, a bailer and cord will be used to remove LPH from the recovery well or pipe. Viscous LPH may require use of a weighted bailer. If nondedicated, non-disposable bailers are used, they must be cleaned between wells with Alconox<sup>®</sup> or similar detergent and then rinsed with distilled water. Bailing should be repeated until only a sheen of LPH is observed in the bailer. An attempt should be made to minimize the quantity of water removed concurrently with the LPH.

The LPH and water bailed from each well or pipe is placed in a graduated pail to measure the quantity of LPH removed. The volume of LPH in the pail can be measured either by using the volume markings on the side of the pail or by using the probe to measure the thickness of LPH in the pail. After measurement, the LPH and water in the pail is transferred to the LPH storage vessel for temporary storage.

The attached field data sheet (Attachment 1) should be used to record LPH recovery data, and a new field data sheet should be used for each LPH recovery event.

## LPH Recovery Using Canisters

The use of passive hydrocarbon skimming canisters to recover LPH offers another simple method of LPH recovery. If sufficient LPH is being observed in recovery wells or recovery pipes, LPH recovery by passive skimming canisters may be appropriate. LPH is removed from the recovery well or pipe by a passive skimming canister (similar to a sampling bailer) with a hydrophobic filter that allows the entry of LPH into the canister, but excludes water. LPH is collected and stored within the canister until it is emptied during periodic monitoring. The equipment and steps involved for canister recovery are similar to bailer recovery.

## **Procedures**

During each LPH recovery event, LPH thickness is measured and recorded as described for bailer recovery. After LPH measurement and decontamination of the interface probe, the canister will be lowered to the LPH/water interface and secured in place to capture LPH. The skimmer canister should be placed at an elevation in the recovery well or pipe such that the LPH/water interface will be within the screened interval of the canister (see owner's manual), allowing for fluctuations in the water table.

During periodic monitoring, the canister will be removed from the recovery well or pipe and the contents will be emptied into a graduated pail to measure the quantity of LPH recovered. The volume of LPH will be measured either by using the volume markings on the side of the pail or by using an interface probe to measure the thickness. Measurements of LPH volumes and recovery rates will be recorded on field forms similar to the example shown in Attachment 1. After measurements have been recorded, the canister will be placed back into the well.

Initially, the canisters will be monitored weekly and the amount of LPH recovered will be evaluated to determine whether this monitoring schedule is appropriate. If the LPH collection canister is full, more frequent monitoring will be performed. Similarly, if the canister is less than half full, less frequent monitoring will be performed. Adjustments to the monitoring schedule will be made as necessary.

## **RECYCLING OF LPH AND SOLID WASTE DISPOSAL**

Recovered LPH will be transferred to the LPH storage vessel located on the Property. The storage vessel will consist of a suitable container (e.g., 55-gal UN-approved drum or equivalent). Provisions will be made for secondary containment (e.g., an overpack drum or equivalent), security (i.e., fencing), and safety (i.e., signage) as appropriate. All LPH storage will be in accordance with all applicable laws, regulations, and codes.

When sufficient quantities of LPH and groundwater have been collected from the recovery wells or pipes, a licensed petroleum hydrocarbon waste disposal or recycling firm should be contacted to dispose of the recovered LPH and groundwater. Records will be kept as to volume of LPH and groundwater removed from the Property.

Solid wastes generated during collection of LPH thickness data and LPH removal (e.g., paper towels, disposable gloves) will be cleansed of any gross LPH accumulation, placed in plastic garbage bags, and disposed of at an appropriate landfill.

## **MAINTENANCE**

Little maintenance is required of the interceptor trench and recovery pipes, recovery wells, or surface cap, and no specific maintenance schedule is required. However, observations of poorly performing wells, holes in the surface cap, or inoperable

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equipment may require immediate attention, as appropriate. For example, well locks, well caps, monument seals, or skimmer canisters may require periodic replacement, and holes may develop in the surface cap, which would require patching with the appropriate material (i.e., asphalt patch).

# PERFORMANCE AND COMPLIANCE MONITORING PLAN

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The PCMP is included to address Ecology's requirements for cleanup action in accordance with WAC 173-340-410. The purpose of the PCMP is to describe the monitoring that is used to document that the interim actions are properly designed and effective. Specifically, the objectives of performance monitoring is to demonstrate that the interceptor trench and recovery pipes, and recovery wells are removing LPH from the Property and that LPH is not moving off the Property.

Performance monitoring consists of checking several wells located around the perimeter of the Property and within the central portion of the Property for the presence of LPH and measuring depth to water. The presence of LPH at downgradient wells may indicate a poorly performing interceptor trench; however, other factors not related to system design may temporarily alter groundwater flow directions and result in presence of LPH at downgradient LPH monitoring wells.

Initially, nine off-Property LPH monitoring wells (W-2, W-3, W-5, W-17, MW-19, MW-20, MW-21, MW-35, MW-37), and five existing on-Property wells (W-6, W-10, MW-10, MW-18, and MW-40) will be monitored on a quarterly basis. The locations of the LPH monitoring wells are shown on Figure A-3. During quarterly monitoring activities, depth to LPH (if present) and depth to water will be recorded using an interface probe, as described in the LPH removal section. The interface probe will be decontaminated between wells, as described above. Field measurements will be recorded on the form in Attachment 1.

If LPH is detected in any of the monitoring wells, more frequent monitoring and/or LPH recovery activities will be conducted, as necessary.



## SCHEDULE

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The LPH recovery activities and performance monitoring activities will be conducted according to the following schedule:

- LPH recovery activities will be performed on all LPH recovery wells or pipes on an appropriate frequency. Initially, recovery wells or pipes will be monitored for the presence of LPH on a weekly basis, and if greater than 0.20 ft of LPH is present, the LPH will be recovered from the well. If the measured LPH thickness in a recovery well is less than 0.02 ft on subsequent weekly visits, then the recovery frequency may be reduced as appropriate.
- LPH monitoring wells located around the perimeter of the Property will be monitored for the presence of LPH on a quarterly basis (Figure A-3). If LPH is detected in any of the monitoring wells, they will be monitored on a more frequent basis. If sufficient LPH is detected in the monitoring well, LPH recovery activities will be performed on that well.
- An annual report will be prepared in letter format and will be submitted to Ecology. The annual report will include monitoring frequency, LPH thickness measurements, LPH recovery data, total LPH recovered, maintenance activities, and recommendations for future recovery activities. The report will be submitted to Ecology prior to February 15 of each year, and will include all data collected through December 31 of the preceding year.

## **Attachment 1**

### **Field Data Sheet**

# Liquid Petroleum Hydrocarbon (LPH) Recovery Field Data Sheet

Mobil Oil Corporation/American Distributing Bulk Plant Properties  
Everett, Washington

Name: \_\_\_\_\_ Time since last LPH Recovery Event: \_\_\_\_\_

Date: \_\_\_\_\_ Volume of LPH stored on site : \_\_\_\_\_

Location designation	Time	Depth to LPH from top of casing (ft)	Depth to water from top of casing (ft)	LPH thickness (ft)	Volume of LPH recovered from location (gallons)

Notes:

Depth to LPH and Depth to Water are measured using an oil/water interface probe. LPH thickness is calculated by subtracting the depth to LPH from the depth to water.